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(FILE 'HOME' ENTERED AT 18:16:10 ON 28 MAR 2007)

FILE 'REGISTRY' ENTERED AT 18:16:37 ON 28 MAR 2007

L1 1 S 7664-41-7  
L2 1 S 1314-23-4  
L3 5 S 1305-78-8 OR 1309-48-4 OR 1314-36-9 OR 1314-37-0 OR 12024-21-4  
L4 5 S 14265-44-2 OR 14808-79-8 OR 1313-27-5 OR 1303-86-2 OR 1314-35-8  
L5 6 S 1309-37-1 OR 1344-28-1 OR 7631-86-9 OR 12055-23-1 OR 13463-67-7  
OR 18282-10-5  
FILE 'CA' ENTERED AT 18:27:55 ON 28 MAR 2007  
L6 1661 S (L1 OR NH3 OR AMMONIA) (4A) (SENSOR OR DETECTOR OR (SENSITIVE OR  
DETECTION OR ANALYSIS) (2A) (FILM OR LAYER OR MATERIAL OR ELEMENT))  
L7 36 S L6 AND (L2 OR ZIRCONIA OR ZRO2 OR (ZIRCONIUM OR ZR) (1A) (OXIDE OR  
DIOXIDE OR OXYNITRATE))  
L8 174 S L6 AND (L4 OR PO42 OR PO43 OR SO42 OR PHOSPHATE OR SULFATE OR MOO3  
OR MOLYBDENUM OXIDE OR MOLYBDATE OR WO3 OR TUNGSTEN OXIDE OR BORON  
OXIDE OR B2O3)  
L9 288 S L6 AND (L5 OR (FERRIC OR IRON OR TIN OR HAFNIUM OR TITANIUM OR  
SILICON OR ALUMINUM) (1A) (OXIDE OR DIOXIDE OR TRIOXIDE) OR SNO2 OR  
HFO2 OR TIO2 OR FE2O3 OR AL2O3 OR SIO2 OR ALUMINA OR SILICA)  
L10 35 S L6 AND L3  
L11 59 S L8 AND L9  
L12 9 S L6 AND SOLID(3A) (ACID OR ACIDIC)  
L13 49804 S (GAS OR VAPOR OR VOLATILE) (4A) (SENSOR OR DETECTOR OR (SENSITIVE  
OR DETECTION OR ANALYSIS) (2A) (FILM OR LAYER OR MATERIAL OR  
ELEMENT))  
L14 2630 S L13 AND (L2 OR ZIRCONIA OR ZRO2 OR (ZIRCONIUM OR ZR) (1A) (OXIDE OR  
DIOXIDE OR OXYNITRATE))  
L15 2307 S L13 AND (L4 OR PO42 OR PO43 OR SO42 OR PHOSPHATE OR SULFATE OR  
MOO3 OR MOLYBDENUM OXIDE OR MOLYBDATE OR WO3 OR TUNGSTEN OXIDE OR  
BORON OXIDE OR B2O3)  
L16 10162 S L13 AND (L5 OR (FERRIC OR IRON OR TIN OR HAFNIUM OR TITANIUM OR  
SILICON OR ALUMINUM) (1A) (OXIDE OR DIOXIDE OR TRIOXIDE) OR SNO2 OR  
HFO2 OR TIO2 OR FE2O3 OR AL2O3 OR SIO2 OR ALUMINA OR SILICA)  
L17 1139 S L14, L16 AND L15  
L18 280 S L14 AND L15  
L19 126 S L18 AND L3  
L20 10 S L17 AND SOLID(3A) (ACID OR ACIDIC)  
L21 234 S L7, L10-12, L19-20  
L22 176 S L21 AND PY<2004  
L23 22 S L21 NOT L22 AND PATENT/DT  
L24 198 S L22-23

=> d bib,ab,kwic 124 1-198

L24 ANSWER 25 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 140:280330 CA

TI **Ammonia sensor**

IN Nishiyama, Hiroyuki; Kakimoto, Shiro; Inoue, Ryuji; Yokoi, Hitoshi;  
Ishida, Noboru; Oshima, Takafumi; Sugaya, Satoshi; Imaeda, Koichi;  
Hattori, Tadashi; Satsuma, Atsushi

PA NGK Spark Plug Co. Ltd., Japan

SO Eur. Pat. Appl., 39 pp.

PI	EP 1403637	A1	20040331	EP 2003-256022	20030925
	US 2004132202	A1	20040708	US 2003-669660	20030925
PRAI	JP 2002-279680	A	20020925		
	JP 2003-51346	A	20030227		
	JP 2003-275327	A	20030716		
	JP 2003-326576	A	20030918		

AB In an **ammonia sensor**, lead portions are provided on an insulating substrate; a pair of comb-shaped electrodes are connected to the lead portions, resp.; a sensitive layer is provided on the comb-shaped electrodes; and a protective layer is provided on the sensitive layer. In particular, the **sensitive layer** is formed of a **gas-sensitive raw material** predominantly contg. **ZrO<sub>2</sub>** and contg. at least W in an amt. of 2 to 40% as reduced to **WO<sub>3</sub>**.

L24 ANSWER 40 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 138:257681 CA

TI Solid state potentiometric gaseous oxide sensor

IN Wachsmann, Eric D.; Azad, Abul Majeed

PA University of Florida, USA

SO PCT Int. Appl., 58 pp.

PI	WO 2003027658	A1	20030403	WO 2002-US31041	20020930
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	US 2003066519	A1	20030410	US 2001-966240	20010928
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PRAI	US 2001-966240	A	20010928		
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AB A solid state electrochem. cell for measuring the concn. of a component of a gas mixt. includes a 1st semiconductor electrode and a 2nd semiconductor electrode formed from 1st and 2nd semiconductor materials, resp. The materials are selected so as to undergo a change in resistivity upon contacting a gas component, such as CO or NO. An electrolyte is provided in contact with the 1st and 2nd semiconductor electrodes. A ref. cell can be included in contact with the electrolyte. Preferably, a voltage response of the 1st semiconductor electrode when exposed to the component is opposite in slope direction to that of the 2nd semiconductor electrode to produce a voltage response equal to the sum of the abs. values of the individual voltages generated. A combustion engine includes an emission sensor for measuring pollutants and a feedback and control system uses measured pollutant concns. to direct adjustment of engine combustion conditions.

L24 ANSWER 50 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 137:288170 CA

TI Poison resistant combustible **gas sensors** and method for warning of poisoning

IN Wang, Chuan-Bao; Tomasovic, Beth; Warburton, P. Richard; Wang, Annie Q.

PA Industrial Scientific Corporation, USA

SO U.S. Pat. Appl. Publ., 17 pp.

PI	US 2002146352	A1	20021010	US 2001-771882	20010130
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PRAI	US 2001-771882	A3	20010130		
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AB A poison resistant combustible gas sensing element, a method for its prodn. and a method for detg. poisoning of the element. The element includes an elec. heating element, an inner layer coated on the elec. heating element and contg. a precious metal catalyst supported on a porous oxide, the precious metal catalyst catalyzing combustion of a combustible gas to be detected by the element, and an outer layer

overlaying the 1st layer, and contg. a catalytic compd. capable of trapping gases which poison the precious metal catalyst, the catalytic compd. being supported on a porous oxide.

L24 ANSWER 67 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 136:30868 CA

TI NOx sensors based on interfacing yttria stabilized **zirconia** with p and n-type semiconducting oxides

AU Grilli, Maria Luisa; Di Bartolomeo, Elisabetta; Traversa, Enrico

CS Dipartimento di Scienze e Tecnologie Chimiche, Universita di Roma "Tor Vergata", Rome, 00133, Italy

SO Key Engineering Materials (2002), 206-213(Pt. 2, Euro Ceramics VII), 1243-1246

AB Electrochem. NOx sensors based on coupling yttria stabilized **zirconia** (YSZ), an O-ion conductor, with different semiconducting oxides as auxiliary phase were studied. Nanosized LaFeO3 perovskite-type oxide, a p-type semiconductor, and n-type **WO3** were used as auxiliary phases because of their NO2 sensing properties in resistive-type devices. LaFeO3 or **WO3** thick films were deposited using a screen printing oil on one side of the solid-electrolyte pellets. The sensors were fully exposed to the same atm. EMF., Polarization curves, amperometric and electrochem. impedance spectroscopy (EIS) measurements were performed in air and at different concns. of NO2 in air, at selected temps.

L24 ANSWER 78 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 133:304983 CA

TI A thermocatalytic **sensor** for selective determination of **ammonia** in gas media

AU Demenchuk, E. Yu.; Khamrakulov, T. K.

CS Sochi Research Center of the Russian Academy of Sciences, Sochi, Russia

SO Industrial Laboratory (Diagnostics of Materials) (Translation of Zavodskaya Laboratoriya, Diagnostika Materialov) (2000), 65(11), 697-698

AB A selective thermocatalytic **sensor** for automatic anal. of **NH3** is developed. The selectivity of detn. is provided by the use of catalysts based on transition-metal oxides that exhibit different activity toward the gas-mixt. components. The **sensor** allows detn. of **NH3** in gas media over a wide range of concn. and temp. with an accuracy <4.6%.

L24 ANSWER 80 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 133:197609 CA

TI Bar-type NOx **gas sensor** having **WO3** sensing film

IN Kim, Tae Song; Jung, Hyung Jin; Jung, Chong Hak

PA Korea Institute of Science and Technology, S. Korea

SO U.S., 13 pp.

PI US 6113859

A

20000905

US 1998-18802

19980204

PRAI US 1998-18802

19980204

AB A plate-type NOx **gas sensor** having a **WO3** sensing film which are capable of preventing temp. variation of a sensing thin film depending on gas flow to decrease heat loss thereof, whereby extending the life span of batteries of a portable **gas sensor**. The plate-type NOx **gas sensor** includes a Pt thin film electrode formed on a front surface of an alumina substrate, a **tungsten oxide** thin film for sensing NOx gas deposited on the front surface of the substrate on which the Pt thin

film electrode is formed, a heater formed on a back surface of the alumina substrate for holding a portion of the **tungsten oxide** thin film for sensing NOx gas within a predetd. temp. range, a conducting wire for connecting between the Pt thin film electrode and the heater and a sheet made of at least one material selected from a group composed of Al2O3, mullite, cordierite, magnesia and **zirconia**, coated on the back surface of the substrate on which the heater is formed, for burying completely the heater from an exterior atm. to protect the heat dissipation. The NOx **gas sensor** may be fabricated as a bar type and also have a catalytic layer on the sensing layer to enhance the sensing characteristics of the sensor.

L24 ANSWER 82 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 133:114317 CA

TI Method and device for ammonia detection

IN Kita, Shinji; Inoue, Ryuji

PA Ngk Spark Plug Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 18 pp.

PI JP 2000193639 A 20000714 JP 1998-370499 19981225

PRAI JP 1998-370499 19981225

AB The title device can be used for detection of ammonia in a wide concn. range and gives precise results even for gas samples contg. nitrogen oxide. The device comprises an elec. O concn. cell having O permeable electrodes formed on both sides of an O ion conductive solid electrolyte substrate, and an O pump. The ammonia concn. is detd. based on the elec. current passing through the O pump while the emf of the concn. cell reaches the preset value.

L24 ANSWER 84 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 133:26268 CA

TI Resistance-based gas sensors with **WO3-TiO2** active layer for determination of NOx in automobile exhaust gases

IN Kornely, Susanne; Seidl, Monika; Meixner, Hans; Fleischer, Maximilian; Lampe, Uwe; Mrotzek, Christine; Pohle, Roland; Giber, Janos

PA Siemens Aktiengesellschaft, Germany

SO Eur. Pat. Appl., 10 pp.

PI EP 1008847 A2 20000614 EP 1999-123914 19991201

PRAI DE 1998-19856369 A 19981207

AB A resistive gas sensor, esp. suitable for detection of NO, NO2, NH3, or hydrocarbons in an automobile exhaust gas, consists of a gas-sensitive layer, a corresponding measuring electrode, and a heating unit, in which the gas-sensitive layer consists of a mixt. of **WO3** and **TiO2**, which is prepd. by crystg. **WO3** around a nucleus of **TiO2**. The gas-sensitive layer (5-50  $\mu$ m thick), which contains  $\geq 50$  wt.% **WO3**, can be prepd. by the sol-gel method using tungstic acid salt (M2WO4, in which M = H, Na, K, or NH4) precursors, or can be prepd. from Ti(OC3H7)4 and WCl6 precursors. The gas sensor is also connected to an oxidn. catalyst consisting of an impregnated metal oxide support (e.g.,  $\gamma$ -Al2O3, **SiO2**, or **TiO2** impregnated with a noble metal, such as Pt, Rh, Pd, or Ir) or a pure metal oxide catalyst (e.g., **TiO2-V2O5** contg. CuO or MnO2).

L24 ANSWER 85 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 133:8337 CA

TI Gas-sensing characteristics of modified-MoO<sub>3</sub> thin films using Ti-overlayers for **NH<sub>3</sub> gas sensors**  
AU Imawan, C.; Solzbacher, F.; Steffes, H.; Obermeier, E.  
CS Microsensor and Actuator Technology (MAT), Technical University of Berlin, Berlin, D-13355, Germany  
SO Sensors and Actuators, B: Chemical (2000), B64(1-3), 193-197  
AB Thin films of modified MoO<sub>3</sub> using Ti-overlayers were deposited by magnetron sputtering. Gas-sensing characteristics of the sensor element and the effect of Ti-overlayers and their prepn. parameters on the gas-sensitive properties of the sensors were examd. The Ti-overlayer very effectively enhanced sensitivity and selectivity to NH<sub>3</sub> gas. Sensor sensitivity was strongly affected by process parameters and thickness of the sputtered Ti-overlayers. The sensor, with a 50 nm Ti-overlayer thickness, featured the highest gas sensitivity toward NH<sub>3</sub>, while its cross-sensitivity to other gases such as H<sub>2</sub>, SO<sub>2</sub> and CO was comparatively small. Sensor operating temp. is 200°.

L24 ANSWER 87 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 132:302577 CA

TI Desorption behavior of ammonia from TiO<sub>2</sub>-based specimens - ammonia sensing mechanism of double-layer sensors with TiO<sub>2</sub>-based catalyst layers

AU Shimizu, Y.; Okamoto, T.; Takao, Y.; Egashira, M.

CS Department of Materials Science and Engineering, Faculty of Engineering, Nagasaki University, Nagasaki, Japan

SO Journal of Molecular Catalysis A: Chemical (2000), 155(1-2), 183-191

AB Desorption behavior of gases from the NH<sub>3</sub>-preadsorbed catalyst and sensing materials used for double-layer semiconductor **NH<sub>3</sub> sensors** was studied under different adsorption and desorption conditions. The 0.5 Ir/TiO<sub>2</sub> catalyst material was found to exhibit mild activity for NH<sub>3</sub> oxidn. and high activity for reducing NO to N<sub>2</sub> in an atm. contg. NH<sub>3</sub> and O<sub>2</sub>. This nature was considered to be effective for reducing the interference from NO<sub>x</sub> at the vicinity of the interface between the catalyst layer and the In<sub>2</sub>O<sub>3</sub> sensing layer doped with 5 mol% MgO. The redn. of the interference led to high NH<sub>3</sub> sensitivity and a normal response to give a resistance decrease upon exposure to NH<sub>3</sub> even at higher temps. The abnormal response of a double-layer sensor with a 0.5 Pt/TiO<sub>2</sub> catalyst layer to give a resistance increase upon exposure to NH<sub>3</sub> esp. at higher temps. was confirmed to arise from its high NH<sub>3</sub> oxidn. activity and low NO redn. activity.

L24 ANSWER 91 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 132:175058 CA

TI Semiconductor **gas sensor**

IN Inoue, Ryuji; Fuma, Tomoihiro; Ohshima, Takafumi

PA NGK Spark Plug Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

PI JP 2000055854 A 20000225 JP 1998-226917 19980811

PRAI JP 1998-226917 19980811

AB The title semiconductor oxide **gas sensor** is used for anal. of atm. gas based on the measurement of the elec. resistivity variation corresponding to the gas concn. The sensor is made by forming a pair of electrodes on the surface of a ceramic substrate and a semiconductor

oxide member disposed on the substrate connected with the electrodes and having its elec. resistivity vary corresponding to the gas concn. A diffusion control layer is on the substrate is used to control the passage of the sample gas diffusing from atm. to the semiconductor oxide. The diffusion control layer is made by spraying particles of an insulative material on the semiconductor oxide surface to a thickness of 0.1-0.3 mm.

L24 ANSWER 103 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 130:46712 CA

TI Study on NH<sub>3</sub> sensing properties of **WO<sub>3</sub>-SiO<sub>2</sub>** materials prepared by sol-gel method

AU Wang, Xusheng; Zhang, Liangying; Yao, Xi; Shimano K; Sakai G; Miura N; Yamazoe N

CS Electronic Materials Research Laboratory, Xi'an Jiaotong University, Xi'an, 710049, Peop. Rep. China

SO Gongneng Cailiao (1998), 29(3), 276-280

LA Chinese

AB Gas sensing materials of **WO<sub>3</sub> + x (wt%) SiO<sub>2</sub>** (x = 0, 5, 10, 20) were prepd. by sol-gel method, its microstructure was characterized by XRD, AFM, XPS, and surface area analyzer. It was obsd. that the nanosized monoclinic phase of **WO<sub>3</sub>** was formed, and the grain size decreased with the increase of **SiO<sub>2</sub>** amt. The NH<sub>3</sub> sensing properties of the materials were measured in conventional flow app. It showed that the **WO<sub>3</sub> + 5 wt% SiO<sub>2</sub>** sensing element, which was superior to pure **WO<sub>3</sub>** element, gave fairly good response to NH<sub>3</sub> above 350°C.

L24 ANSWER 105 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 129:334679 CA

TI Formation of **SnO<sub>2</sub>** film-type **sensor** device for **NH<sub>3</sub>** gas determination

AU Sobukawa, Tadashi; Tamura, Katsuhiko; Kaneko, Ayumi; Kawakami, Teruei; Fujita, Yoshinori; Katoh, Shingo; Atsumi, Hiroyasu; Inagaki, Norihiro

CS Mater. Technol. Dep., Shizuoka Ind. Res. Inst. Shizuoka Prefect., Shizuoka, 421-1298, Japan

SO Shizuoka-ken Shizuoka Kogyo Gijutsu Senta Kenkyu Hokoku (1998), 43, 59-65

LA Japanese

AB Sensor devices which were composed of a **SnO<sub>2</sub>** film and a catalyst were investigated for detn. of ammonia gas. A combination of the **SnO<sub>2</sub>** film which was deposited by vacuum evapn. with catalysts such as **WO<sub>3</sub>-Pt**, **WO<sub>3</sub>-Pd**, **Cr<sub>2</sub>O<sub>3</sub>-Pt**, **Cr<sub>2</sub>O<sub>3</sub>-Pd** shows good sensitivity toward ammonia gas. The **SnO<sub>2</sub>** Sensor device with **WO<sub>3</sub>-Pt**, **WO<sub>3</sub>-Pd**, **Cr<sub>2</sub>O<sub>3</sub>-Pt**, **Cr<sub>2</sub>O<sub>3</sub>-Pd** as a catalyst show good stability for detn. of ammonia gas in temp. range of 80 to 300°, and detect ammonia mols. of less than 1000 ppm concn. Consequently, the **SnO<sub>2</sub>** sensor device with **WO<sub>3</sub>-Pt**, **WO<sub>3</sub>-Pd**, **Cr<sub>2</sub>O<sub>3</sub>-Pt**, **Cr<sub>2</sub>O<sub>3</sub>-Pd** as a catalyst is a good **sensor** for detn. of **ammonia** gas.

L24 ANSWER 107 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 129:254083 CA

TI **Ammonia** gas **sensor** and **ammonia** gas detection

IN Yoon, Don-Hyon; Lee, Kyu-Jon; Kong, Chul-Han; Hong, Hyun-Ki; Kim, Sun-Yul

PA LG Electrics Co., Ltd., S. Korea

SO Jpn. Kokai Tokkyo Koho, 6 pp.

PI JP 10221286 A 19980821 JP 1998-11125 19980123

PRAI KR 1997-2253 A 19970127

AB The title sensor comprises a substrate, a heater formed with pattern on the lower portion of the substrate, a 1st and a 2nd electrodes formed on the upper portion of the substrate with specific pattern, a sensing point formed on a specific region on the 1st electrode, and a 2nd sensing point contg. catalyst formed on a specific region of the 2nd electrode. The 1st sensing point is made by using SnO<sub>2</sub>, WO<sub>3</sub>, and Fe oxide (Fe<sub>2</sub>O<sub>3</sub> or Fe<sub>3</sub>O<sub>4</sub>). The 2nd sensing point is made of SnO<sub>2</sub>, WO<sub>3</sub>, and Pt.

L24 ANSWER 109 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 129:152427 CA

TI Highly sensitive and selective ammonia gas sensor

AU Yun, Dong Hyun; Kwon, Chul Han; Hong, Hyung-Ki; Kim, Seung-Ryeol; Lee, Kyuchung; Song, Ho Geun; Kim, Ji Eon

CS Devices and Materials Laboratory, LG Corporate Institute of Technology, Seoul, 137-140, S. Korea

SO Transducers 97, International Conference on Solid-State Sensors and Actuators, Chicago, June 16-19, 1997 (1997), Volume 2, 959-962

Publisher: Institute of Electrical and Electronics Engineers, New York, N. Y.

AB We have fabricated and examd. an ammonia gas sensor with high sensitivity using thick-film technol. Sensing material of the gas sensor is FeOx-WO<sub>3</sub>-SnO<sub>2</sub> oxide semiconductor. The sensor exhibits resistance increase upon exposure to low concn. of ammonia gas. The resistance of the sensor is decreased, on the other hand, for exposure to reducing gases such as Et alc., methane, propane and carbon monoxide. We have proposed and investigated a novel method for detecting ammonia gas quite selectively by using a sensor array with two sensing elements which contains an ammonia gas sensor and a compensation element. The compensation element is a Pt-doped WO<sub>3</sub>-SnO<sub>2</sub> gas sensor which shows opposite direction of resistance change in comparison with the ammonia gas sensor upon exposure to ammonia gas. Excellent selectivity has been achieved using the sensor array with two sensing elements.

L24 ANSWER 121 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 127:75215 CA

TI Ammonia sensing properties of WO<sub>3</sub>-based specimens - effect of catalytic activities

AU Shimizu, Yasuhiro; Kawasoe, Atsushi; Takao, Yüji; Makoto, Egashira

CS Department of Materials Science and Engineering, Faculty of Engineering, Nagasaki University, Nagasaki, 852, Japan

SO Proceedings - Electrochemical Society (1997), 96-27(Ceramic Sensors), 117-122

AB The NH<sub>3</sub>-sensing properties of single-layer WO<sub>3</sub>-based sensors and double-layer sensors of an In<sub>2</sub>O<sub>3</sub>-MgO layer coated with different WO<sub>3</sub>-based catalyst layers were discussed based on the oxidn. and desorption behavior of NH<sub>3</sub> preabsorbed on WO<sub>3</sub>-based specimens. WO<sub>3</sub>-based specimens tended to exhibit lower catalytic activity for NH<sub>3</sub> oxidn. compared with Al<sub>2</sub>O<sub>3</sub>-based specimens. 0.5Ir/WO<sub>3</sub> exhibited highest activities both for NH<sub>3</sub> oxidn. and for NO<sub>x</sub> redn. among the specimens tested, and they

exhibited the highest NH<sub>3</sub> sensitivity as a single-layer sensor.

L24 ANSWER 133 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 126:69370 CA

TI Sensing characteristics and mechanism of hydrogen sulfide sensor using stabilized **zirconia** and oxide sensing electrode

AU Miura, Norio; Yan, Yongtie; Lu, Geyu; Yamazoe, Noboru

CS Department of Materials Science and Technology, Graduate School of Engineering Sciences, Kyushu University, Kasuga-shi, Fukuoka, 816, Japan

SO Sensors and Actuators, B: Chemical (1996), B34(1-3), 367-372

AB A new type of electrochem. sensors for H<sub>2</sub>S was developed by combining a Y<sub>2</sub>O<sub>3</sub>-stabilized **zirconia** (YSZ) tube with a sensing oxide layer of **WO<sub>3</sub>**. The sensor device composed was an electrochem. cell of the form, air, Pt|YSZ|**WO<sub>3</sub>**, Pt, H<sub>2</sub>S (+air). This device was found to respond well to 0.2-25 ppm H<sub>2</sub>S in air at 400°C, with acceptable response rates. The EMF of the sensor was linearly related to the logarithm of the H<sub>2</sub>S concn. with a slope of -74 mV/decade. The EMF was hardly affected by the coexistence of CO<sub>2</sub> and water vapor. Based on the measurements of anodic and cathodic polarization curves, the H<sub>2</sub>S sensing signal was suggested to reflect the mixed potential at the **zirconia**/**WO<sub>3</sub>** interface. The possibility of amperometric detection by using the present device was also suggested.

L24 ANSWER 146 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 122:321332 CA

TI Sensor for determining the gradient of ammonia concentration in waste gases

IN Schmelz, Helmut

PA Siemens A.-G., Germany

SO Eur. Pat. Appl., 13 pp.

PI	EP 652435	A2	19950510	EP 1994-116919	19941026
	US 5546004	A	19960813	US 1994-334860	19941104

PRAI DE 1993-4337663 A 19931104

AB The concn. of NH<sub>3</sub> is detd. on the basis of cond. in flue gas and exhaust gas streams to be contacted with catalysts, using sensors from TiO<sub>2</sub> and  $\geq 1$  of **WO<sub>3</sub>**, **MoO<sub>3</sub>**, V<sub>2</sub>O<sub>5</sub>, and V<sub>x</sub>MoyO<sub>32-z</sub> where  $x+y \leq 12$ ,  $x, y \geq 1$  and  $z \leq 1$ .

L24 ANSWER 148 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 122:22632 CA

TI **MoO<sub>3</sub>/TiO<sub>2</sub>** and Bi<sub>2</sub>MoO<sub>6</sub> as **ammonia sensors**

AU Raju, A. R.; Rao, C. N. R.

CS Solid State and Structural Chemistry Unit and Materials Research Centre, Indian Institute of Science, Bangalore -, 560 012, India

SO Sensors and Actuators, B: Chemical (1994), 21(1), 23-6

AB **Ammonia sensors** based on catalytic oxides such as V<sub>2</sub>O<sub>5</sub>, **MoO<sub>3</sub>** and  $\alpha$ -,  $\beta$ - and  $\gamma$ -bismuth **molybdates** have been investigated. **MoO<sub>3</sub>** (15 mol%) supported on TiO<sub>2</sub> and  $\gamma$ -Bi<sub>2</sub>MoO<sub>6</sub> both exhibit satisfactory sensing characteristics for NH<sub>3</sub>, with a reasonably low working temp. (500-575 K) and a min. detection limit of 10 ppm. Humidity has no measurable effect on the performance of these materials. ESR studies show the formation of Mo<sup>5+</sup> species on these oxides on contact with NH<sub>3</sub>.

L24 ANSWER 154 OF 198 CA COPYRIGHT 2007 ACS on STN



AN 120:288820 CA  
 TI High **ammonia** sensitive semiconductor gas **sensors** with double-layer structure and interface electrodes  
 AU Takao, Yuji; Miyazaki, Kenichi; Shimizu, Yasuhiro; Egashira, Makoto  
 CS Fac. Eng., Nagasaki Univ., Nagasaki, 852, Japan  
 SO Journal of the Electrochemical Society (1994), 141(4), 1028-34  
 AB NH<sub>3</sub> gas sensing properties of a single-layer In<sub>2</sub>O<sub>3</sub> doped with 5 mol percent (m/o) MgO [In<sub>2</sub>O<sub>3</sub>-MgO (5 m/o)] sensor and some double-layer sensors with a catalyst layer on it were studied. The single-layer sensor with electrodes at the innermost region exhibited low NH<sub>3</sub> sensitivity due to interference from NO<sub>x</sub> produced as a result of complete oxidn. of NH<sub>3</sub>, esp. at temps. >530°. A slight enhancement in sensitivity was achieved by coating the In<sub>2</sub>O<sub>3</sub>-MgO (5 m/o) sensing layer with a catalyst layer. A more remarkable sensitivity enhancement was realized by changing the electrode position of double-layer sensors from the innermost to the interface between the sensing and the catalyst layer, esp. when TiO<sub>2</sub> loaded with 0.5 wt percent Ir was employed as a catalyst layer. Based on the catalytic activity of the sensing and the catalyst materials, possible NH<sub>3</sub> sensing mechanism of **sensors** is discussed.

L24 **ANSWER 157 OF 198** CA COPYRIGHT 2007 ACS on STN  
 AN 119:261582 CA  
 TI carbon dioxide-sensing characteristics of tin dioxide element modified by lanthanum oxide  
 AU Mizuno, Noritaka; Yoshioka, Tetsunori; Kato, Kazuyoshi; Iwamoto, Masakazu  
 CS Catalysis Research Centre, Hokkaido University, Sapporo, 060, Japan  
 SO Sensors and Actuators, B: Chemical (1993), 13(1-3), 473-5  
 AB When an SnO<sub>2</sub> element is impregnated with an aq. soln. of metal nitrate or acetate by coating with a brush and calcining at 773 K for 5 h, the element shows sensitivity to ppm-levels of CO<sub>2</sub>. Among the elements, the La<sub>2</sub>O<sub>3</sub>-loaded SnO<sub>2</sub> element is found to show promising sensing properties to CO<sub>2</sub> in dry air at 673 K, i.e., rather high sensitivity and quick response. The sensing properties depend on the operation temp. and the amt. of La<sub>2</sub>O<sub>3</sub> loaded: the resp. optima are 673 K and 4.2 wt.%. The sensitivity monotonically increases with the concn. of CO<sub>2</sub> in the range 0-2080 ppm.

IT 1305-78-8, Calcium oxide, uses 1309-37-1, Ferric oxide, uses 1309-48-4, Magnesium oxide, uses 1313-27-5, **Molybdenum oxide (MoO<sub>3</sub>)**, uses 1314-23-4, **Zirconium dioxide**, uses (tin oxide loaded with, for carbon dioxide sensor, characterization of)

L24 **ANSWER 168 OF 198** CA COPYRIGHT 2007 ACS on STN  
 AN 117:10431 CA  
 TI **Ammonia**-selective gas **sensor** using **tin oxide** semiconductor  
 AU Mitsuhashi, Hirokazu; Suzuki, Kengo; Nakane, Mashanori  
 CS New Cosmos Electr. Co., Ltd., Osaka, 532, Japan  
 SO Chemistry Express (1992), 7(5), 409-12  
 LA Japanese  
 AB Effects of PbO<sub>x</sub> and V<sub>2</sub>O<sub>5</sub> addn. to the **tin oxide** semiconductor were examd. in order to develop an NH<sub>3</sub>-selective gas **sensor**. Selectivity of NH<sub>3</sub> to EtOH was improved when the **tin oxide** inner layer was covered with

WO3-Al2O3 catalyst outer layer.

L24 ANSWER 171 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 116:257991 CA

TI Metal oxide semiconductor gas sensors

IN Yamazoe, Noboru; Miura, Norio; Nakayama, Chiaki; Ando, Masami

PA Toto, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

PI JP 04029049 A 19920131 JP 1990-135787 19900525

PRAI JP 1990-135787 19900525

AB The title sensors use changes of elec. resistance accompanied with gas-adsorption and -desorption with metal oxide semiconductors which comprise metal oxide (as main component) of **SnO2**, **TiO2**, **Fe2O3**, **In2O3**, **NiO**, **CoO**, **ZnO**, or **MgFe2O4**; and additives of catalyst of **V2O5**, **P2O5**, **MoO3**, **Cs2O**, or **WO3**, or **Ru**, **Pt**, or **Ag**. The sensors are useful for detection of basic gases, esp., **NH3**. Thus, 5 ppm **NH3** was detected by a **sensor** prepd. from **SnO2** and **V2O5**.

L24 ANSWER 172 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 116:65918 CA

TI Measurement of ammonia with the Solidox-ammonia system

AU Haefele, E.; Kaltenmaier, K.; Schoenauer, U.

CS Roth-Tech. G.m.b.H. und Co., Gaggenau, D-7560, Germany

SO Sensors and Actuators, B: Chemical (1991), B4(3-4), 529-31

AB The phys. principles are described, of an **NH3** detn. method, using the Solidox **ZrO2** sensor which is comparable to the lambda sensor. One of the sensor electrodes is sensitive only to **NH3** and the elec. potential varies proportionally to the **NH3** concn. in the gas phase. Interferences of other gases like **O**, **H2O**, and **CO2** can be eliminated. The accuracy in the low range ( $\leq 20$  ppm) is  $\pm 2$  ppm.

L24 ANSWER 173 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 115:141454 CA

TI Application of the **zirconium dioxide** sensor in determination of pollutant gases

AU Haefele, E.; Kaltenmaier, K.; Schoenauer, U.

CS Roth-Tech. G.m.b.H. und Co., Gaggenau, D-7500, Germany

SO Sensors and Actuators, B: Chemical (1991), B4(3-4), 525-7

AB The **ZrO2** sensor were used to det. the **O** content in gases. The same principle may be used for quantification of reducing gases. The electrode material is chem. modified. The potential of these electrodes in direct phys. contact with such a gas mixt. is proportional to the quantity of reducing gas present. This effect is a result of catalytic and adsorptive interactions between the gas and the sensing electrode. Even in trace amts., gases such as **CO** or **NH3** can be detected and quantified. This new sensor type can be used for detg. gas components.

L24 ANSWER 184 OF 198 CA COPYRIGHT 2007 ACS on STN

AN 106:95206 CA

TI **Gas sensors**

IN Moseley, Patrick Timothy

PA United Kingdom Atomic Energy Authority, UK

SO Brit. UK Pat. Appl., 16 pp.

PI GB 2166247 A 19860430 GB 1985-26063 19851022  
PRAI GB 1984-27004 A 19841025

AB A **gas sensor** includes a **gas-sensitive material** which exhibits a response in the form of an increase or a decrease in an elec. property (e.g., resistance, capacitance, and/or impedance) of the material in the presence of a 1st gas and which exhibits the opposite response in the presence of a 2nd gas. A pair of electrodes may be provided in contact with the material. The **gas-sensitive materials** may be selected from various oxides. A table is provided giving the direction of the change in the resistance of various oxides in the presence of various gases. The sensor may be used to detect H<sub>2</sub>, C<sub>2</sub>H<sub>4</sub>, NH<sub>3</sub>, CO<sub>2</sub>, O<sub>2</sub>, C<sub>3</sub>H<sub>8</sub>, CH<sub>4</sub>, CO, Cl<sub>2</sub>, NO<sub>2</sub>, SO<sub>2</sub>, or H<sub>2</sub>S.

=> log y

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